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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,079	03/11/2004	Koichi Tsubaki	01-576	4372

23400 7590 09/22/2004

POSZ & BETHARDS, PLC
11250 ROGER BACON DRIVE
SUITE 10
RESTON, VA 20190

EXAMINER

BELLAMY, TAMIKO D

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,079

Applicant(s)

TSUBAKI, KOICHI

Examiner

Tamiko D. Bellamy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/11/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Behin et al. (6,744,173).

Re to claims 1 and 14, as depicted in figs. 1D and 3I, Behin et al. discloses a substrate (102/310) having an opening, a beam (e.g., first comb structure 118) protruding through the opening of the substrate (102/310). As depicted in fig. 3I, Behin et al. discloses a fixed electrode (e.g., first comb fingers (324) including top layer (324A) and a bottom layer (324B)). As depicted in fig. 1D and 3I, Behin et al. discloses that the beam (e.g., first comb structure 118/322) is movable in a vertical direction of the substrate (310). Behin et al. discloses the capacitance of the vertical comb drives is measured to monitor the angular positions of the rotating element (106) (col. 9, lines 39-50). Therefore the device of Behin et al. teaches an acceleration sensor which is equivalent to a sensor for detecting the physical quantity of beam movable in the vertical direction.

Re to claim 2, as depicted in fig. 3I, Behin et al. discloses a fixed electrode (e.g., first comb fingers (324) including top layer (324A) and a bottom layer (324B)). The top

and bottom layers (324A, 324B) are which is equivalent to a first and second fixed electrodes.

Re to claim 3, as depicted in fig. 3I, Behin et al. discloses the second fixed electrode (e.g., top layer 324A) is disposed over the first fixed electrode (e.g., bottom layer (324B). As depicted in fig. 3I, Behin et al. discloses a second fixed electrode (e.g., top layer 324A) having a top surface disposed on a same plane as the top surface of the movable electrode (e.g., second comb fingers 322). As depicted in fig. 3I, Behin et al. discloses a first fixed electrode (e.g., bottom layer 324B) having a bottom surface disposed on a same plane as the bottom surface of the movable electrode (e.g., second comb fingers 322).

Re to claims 4 and 5, Behin et al. discloses that the capacitance across the comb fingers (115 and 117) may be used to sense the angular positions of the rotating element (106) (see fig. 1D, col. 9, lines 39-43). As depicted in fig. 1D and 3I, Behin et al. discloses the movable electrode (e.g., first comb structure 118 or second comb fingers 322) is movable upwardly. As depicted in fig. 3I, Behin et al. discloses the first capacitor is formed by the first fixed electrode (e.g. top layer 324A) facing the movable electrode (e.g., second comb fingers 322); and the second capacitor is formed by the second fixed electrode (e.g. bottom layer 324B) facing the movable electrode (e.g., second comb fingers 322).

Re to claims 6 and 7, as depicted in figs. 1D and 3I, Behin et al. discloses that the movable electrode (e.g., first comb structure 118 or second comb finger 322) and the first and second fixed electrodes (e.g., top layer 324A and bottom layer 324B) have a rod

shape. Re the further limitations of claim 7, as depicted in fig. 3I, Behin et al. discloses both sides of the movable electrode (e.g. second comb fingers 322) and both sides of the first and second fixed electrodes (324A and 324B) are parallel to the vertical direction of the of the substrate (310).

Re to claim 8, as depicted in fig. 3I, Behin et al. discloses that the first and second fixed electrodes (e.g., first comb fingers (324) including top layer (324A) and a bottom layer (324B)) are cantilevered from the substrate (310).

Re to claim 9, as depicted in fig. 1D, Behin et al. discloses the beam (e.g., first comb structure 118) includes a pair of spring portions (e.g., flexures 108), a massive portion (e.g., rotating element 106), and a plurality of movable electrodes (e.g., second comb fingers 117).

Re to claim 10, as depicted in fig. 3I, Behin et al. discloses the first electrode (e.g., first comb fingers (324)) including a first and second fixed electrode (e.g., top layer 324A and the bottom layer 324B). Behin et al. discloses the opening of the substrate (310) has a rectangular shape such that the substrate includes a pair of latitudinal sides and a pair of longitudinal sides. As depicted in fig. 3I, Behin et al. discloses that the first and second fixed electrodes (top layer 324A and bottom layer 324B) each protrudes from both of the latitudinal sides of the substrate (310). Furthermore, Behin et al. discloses the beam (e.g., second comb fingers 322), the fixed electrode (e.g., first comb fingers (324A, 324B), and the substrate (310) has plane symmetry.

Re to claim 11, Behin et al. discloses that the capacitance across the comb fingers (115 and 117) may be used to sense the angular positions of the rotating element (106)

(see fig. 1D, col. 9, lines 39-43). As depicted in fig. 3I, Behin et al. discloses the first capacitor is formed by the first fixed electrode (e.g. top layer 324A) facing the movable electrode (e.g., second comb fingers 322); and the second capacitor is formed by the second fixed electrode (e.g. bottom layer 324B) facing the movable electrode (e.g., second comb fingers 322). As depicted in fig. 3I, Behin et al. discloses the second fixed electrode (e.g., top layer 324A) is disposed over the first fixed electrode (e.g., bottom layer 324B). As depicted in fig. 3I, Behin et al. discloses a second fixed electrode (e.g., top layer 324A) having a top surface disposed on a same plane as the top surface of the movable electrode (e.g., second comb fingers 322). As depicted in fig. 3I, Behin et al. discloses a first fixed electrode (e.g., bottom layer 324B) having a bottom surface disposed on a same plane as the bottom surface of the movable electrode (e.g., second comb fingers 322).

Re to claim 12, as depicted in figs. 1D and 3I, Behin et al. discloses that the movable electrode (e.g., first comb structure 118 or second comb finger 322) and the first and second fixed electrodes (e.g., top layer 324A and bottom layer 324B) have a rode shape. As depicted in fig. 3I, Behin et al. discloses both sides of the movable electrode (e.g. second comb fingers 322) and both sides of the first and second fixed electrodes (324A and 324B) are parallel to the vertical direction of the of the substrate (310).

Re to claim 13, Behin et al. discloses that the capacitance across the comb fingers (115 and 117) may be used to sense the angular positions of the rotating element (106) (see fig. 1D, col. 9, lines 39-43). Behin et al. the reference '173 is classified under 73/514.32 which is a capacitive type acceleration sensor. Behin et al. discloses the

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capacitance of the vertical comb drives is measured to monitor the angular positions of the rotating element (106) (col. 9, lines 39-50). Therefore the device of Behin et al. teaches an acceleration sensor, which is equivalent to a sensor for detecting the physical quantity applied to the substrate. Behin et al. discloses the substrate (102) is made of a semiconductor, and a fixed electrode (324) and beam (e.g. first comb structure 118) that are inherently made of a doped semiconductor.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamiko D. Bellamy whose telephone number is (571) 272-2190. The examiner can normally be reached on Monday - Friday 6:30 AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

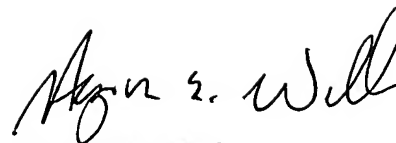
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Tamiko Bellamy

T.B.
September 11, 2004

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A handwritten signature in black ink, appearing to read "Hezron Williams", with a long horizontal line extending to the right.

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800